



# **The integration of entrepreneurship in a school-age engineering curriculum (Resource Exchange)**

## **Karen Plaster**

Karen Plaster is a Professor of Practice in the LeBron James Family Foundation School of Education at the University of Akron. She has a B.S. in Industrial & Systems Engineering from The Ohio State University, an M.S. in Adolescent and Young Adult Education: Mathematics Licensure from The University of Akron, and is currently a Ph.D. student at Kent State University. Her research interests include STEM education, curriculum integration of engineering and entrepreneurship, afterschool engagement with coding and robotics, and early childhood preservice teacher learning.

## **Lynne M Pachnowski (Professor, Math Education)**

## **Brad Maguth (Professor)**

# Think Tank to Shark Tank: Engineer to Entrepreneur

<https://uakron.edu/education/think-tank/>



Grade Level: middle school students

Time Frame: 10 modules each is an hour to 75 minutes

A week-long summer camp to engage middle-level learners (gr. 6-9) in engineering and entrepreneurship inspired our development of this problem-based learning curriculum, Think Tank to Shark Tank: Engineer to Entrepreneur. In the curriculum, participants create an innovation to solve a pain point (a problem) using the engineering design process. Students implement what they learn about intellectual property, engineering constraints, customer identification, business model development, and marketing strategies throughout the week to perform a final pitch. Outside of peer and faculty feedback throughout, a group of local industry experts and business leaders listens to the students' final pitch to offer suggestions and constructive feedback.

The Barker Center for Economic Education and the Urban STEM Center have offered this youth summer camp, with its adjoining curriculum, on the University of Akron campus since 2014. In 2019 developers earned funding from Burton D. Morgan Foundation to enhance and formally publish our open-source curriculum that included a youth workbook, a teacher/facilitator handbook, and seven videos of interview compilations with area entrepreneurs, engineers, and business owners. Community partners that have piloted the camp and curriculum include the Akron Urban League, the Boys and Girls Club, and area middle and high educators and students.

The curriculum is divided into ten sessions. A facilitator or teacher may implement the curriculum in either a one-week experience with morning and afternoon sessions, a two-week experience, a ten-week after-school extra-curricular, or educators can choose elements to implement within a course throughout the academic year. The summer day camp, still in operation, runs for six hours a day for a five-day week with a break for lunch. The pitch before local business leaders occurs the final morning, and the following afternoon is a showcase for youth families and friends. This website, <https://uakron.edu/education/think-tank/>, contains the curriculum, companion materials, and videos. Sample student work:

### Introduction

This app that allows you to relax on vacation, knowing your pet is in good hands! This app for all those pet owners will act as an uber for your pets.

### The Pet Petter

The Pet Petter, a product from our store, will be a device to lose your pets whilst on a trip. It will be activated by pressing a button on the app. This will cause a mechanical arm to gently pat your precious animal on the head. It will also have a space for putting an old unused device. This will act as a camera for the safety of the pet.

### Safety of the pets And People

To prevent any accident everyone will have to get a background check. They will also have to take an online course that will teach petcare. And in case of an accident we will not be accountable as we will have people sign a waiver form.

### App Information

The Pet Plaza app will have many functions to ensure perfection for your pet. The app will allow you to find other app users in the area, and to communicate with them to care for your pet. Reviews, and information will be provided about accounts.

### Customer Ratings Average

Reviews	Average Rating
95	4.5
111	4.2
110	3.8
100	3.5

### Our hopes and Dreams For the Product

Our hopes and dreams for our product are for it to be all pet owners best friend. Having pets on at home whilst on vacation can be nerve wracking and many problems appear. Pet plaza will eliminate all this stress for all pet owners everywhere.

### The Pet Plaza

**Cost**

Our product will cost \$78,000 to make, for the app, and \$2.76 for the Pet Petter, boxing included. This will be the costs associated with making our products. These creation costs will be regained from our sales. The app will be free, but, setting up an account will cost \$10, and money gained through the app will have a \$20 commission. Also, the Pet Petter will cost \$10.

Pet Plaza, Brought By  
Daniel & Ethan

## Sweat Stopper

### Introduction

Are you getting sweaty hands? You can get sweaty hands by physical activity, shaking hands or anxiety.

### Other Solutions

Another solution is sweat block but mine is better because the product is attached to you and doesn't need to go in a bag.

### Website

sweatstopper.com

### Sweat Stopper Info

If you don't want sweaty hands I suggest you buy the Sweat Stopper Because the sweat stopper is a wristband that squirts a liquid that keeps your hands from not getting sweaty.

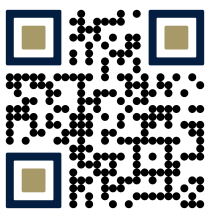
### Prices

My production cost per unit is \$30.00  
And my product price point is \$60.00  
So my profit per unit is \$30.00

### Who will use it

My main Demographic groups are 11 and up  
And also Female and Male.  
How to market my product People with an active life style and people with anxiety.

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## Curriculum 10 Session Overview



<b>Session 1: Pain Points</b>	You are never too young to be an entrepreneur! In this session, participants explore pain points that people and communities face and ways entrepreneurs have built successful businesses from solutions.
<b>Session 2: Market</b>	Just because you think you have a solution to a problem doesn't mean you have a successful business. This session explores if the solution fits the market by completing a Value Proposition Canvas. Participants also learn about forms of intellectual property.
<b>Session 3: Engineering</b>	What do engineers do? In this session, participants learn about the engineering design process and the different types of engineering.
<b>Session 4: Prototype</b>	How will your innovation work, and what will it look like? This session teaches about prototypes and models by completing industrial design activities.
<b>Session 5: Entrepreneurship</b>	What are the attributes of successful entrepreneurs? In this session, participants explore elements of the entrepreneurial mindset, including learning from failure when taking a risk. Participants gain focus group feedback on their innovation.
<b>Session 6: Selling &amp; Target Market</b>	How do you sell your innovation? In this session, participants consider the target market and market segment. The laws of demand and supply are applied to identify a price point.
<b>Session 7: Advertising</b>	How are you going to promote and sell your product? In this session, participants learn about persuasive advertising techniques and color to elicit emotion and reactions. Activities include storyboarding a commercial and advertisements to grab consumers' attention.
<b>Session 8: Preparing to pitch</b>	How do you prepare for the pitch? In this session, participants prepare and rehearse a pitch from the materials they have created.
<b>Session 9: Pitch</b>	What will you do during the pitch? In this session, you learn about dos, don'ts, and provide constructive feedback to your peers.
<b>Session 10: Open house</b>	Now what? In this session, you learn about what to do after you pitch. Do you want to take your innovation to a real market? Where do you go to learn even more about entrepreneurship?